Newsletter

October 1992

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Editorial

Welcome to the October issue of the newsletter. (Okay, so it might actually be November, but what's a few days between friends?) It's great to see that members are finally starting to contribute articles in significant numbers. In the July issue, we had two first-time contributors, and this time around, we have a further three; thanks to Mike Kay, Kieran Tully and Colum Keane for their articles. And those of you who have still not taken the plunge and submitted something, have a go; you don't need to be Shakespeare to write a review of some new hardware or describe a trick you've discovered, or even just sound off about something that's been bothering you.

Mike mentioned that he'd love to see more hints and tips in the newsletter, so contributions of that nature would be most welcome as well. The deadline for submissions for the next newsletter is January 15, and you can give your submission to any CUGI committee member (or send it to me via Infomatique BBS.)

The three months since the last newsletter have possibly been the most exciting three months for Amiga owners since the Amiga was first launched in 1985. Two new Amigas have been released (the A1200 and A4000—see elsewhere in this issue for more information), and at the World of Commodore show in Pasadena last September, Commodore detailed their future plans in vastly more detail than ever before.

Several comprehensive summaries of those plans have since been posted to Usenet by people who attended the show, so here's a summary of those summaries, based mainly on the report of Matt Davidian. Speaking for Commodore was Louis Eggebrecht, the new Vice President of Commodore's Engineering division (replacing Bill Syndes, who was responsible for the IDE drive interface in the Amiga 4000).

As background info, the original Amiga chipset had around 60,000 transistors, the ECS chipset weighed in at 80,000 and the new AGA chipset in the A1200 and A4000 has about 100,000. Commodore have two more chipset generations currently in development, one low end and one high end. The low end will be for console-style machines while the high end will appear in professional systems. While earlier chipsets used NMOS technology, all chipsets from the AGA onwards will use CMOS, allowing faster speed and lower power requirements. (This could also open up the way for a laptop Amiga in the future; one of the main stumbling points to date has been the high power requirements of the custom chips.)

Looking at the low end chipset first, the main features will be:

- Comprised of two chips
- 57 MHz pixel clock (AGA and ECS use 28 MHz)
- ECS/AGA compatible
- Support for 4 Mb floppy disks
- 8× bandwidth increase
- 2× blitter performance
- 800 × 600 256 colour mode at 72 Hz
- 16 bit truecolour mode
- FIFO buffer on serial port for faster rates
- Larger CHIP RAM address space

(Sound is not mentioned above, but since the above suggests that Paula's functions will be integrated into the graphics chips, it seems probable that the number of audio channels will be at least doubled.) So much for the boring low end stuff. The high end chipset is where it *really* gets interesting! Look at this:

- Comprised of four chips with approximately 750,000 transistors
- 32/64 bit wide VRAM (avoids processor contention issues)
- Programmable pixel clock from 57 MHz to 114 MHz
- Support for chunky pixels (e.g. 1 byte = 1 pixel)
- Support for 24 bitplanes
- CD-ROM ready
- Built-in video frame grabber
- Up to 1K×1K screen resolution
- 16 bit audio with sample speeds up to 100 kHz
- Demand-based DMA instead of synchronous DMA
- 12–20× bandwidth increase over AGA chipset
- 32 bit blitter with 8× performance
- Provision for a separate blitter for each bitplane
- Decompression modes for video (JPEG/MPEG presumably)
- ECS/AGA compatible
- Improved genlock support
- 72 Hz refresh rate
- Processor independent (i.e. RISC compatible!)

The high end chipset is expected to be in silicon in 3–6 months. After this, a lot of testing will be needed to determine flaws, how compatible the chips are with the existing chipsets, etc. For comparison, the much simpler AGA chipset was demonstrated to developers in Denver & Milan in September 1991, and the first machine using it appeared exactly a year later. So I would say it will be at *least* 1994 before we see any of this stuff! Commodore's future goals were also stated:

- Incorporate AGA chipset across product line
- Use modular system designs to ease upgrading (such as the A4000's removable CPU card)
- Make use of new & faster processors as quickly as possible
- Incorporate DSP technology
- Introduce SCSI-II on the motherboard and via Zorro III
- Make CD-ROM available across the product line
- Full motion video support
- Cost reduce and enhance CDTV
- Upgrade multimedia software
- Accelerate VLSI development

The Amiga 1200 and 4000 ship with Kickstart 3.0, which includes AGA support and some multimedia utilities (like the new *datatypes.library*). Kickstart 3.1 will introduce network API extensions, file and printer sharing, and DSP support. Kickstart 4.0 will add retargetable graphics (so you can plug in any video card and have Workbench run on it automatically!) and PostScript support.

One of the recent priorities in Commodore Engineering has been to get into the position where new technology can be quickly developed and shipped out the door. The AGA chipset is the first Commodore chipset to be designed using modern design techniques, and its production has been sub-contracted to three different suppliers. This keeps Commodore's costs down, and allows them to turn around new designs much more quickly. They are also working on design tools to allow quality applications software to be developed much more quickly.

Whew! It looks like Commodore have finally got their act together. Three months ago, there was a lot of depression in the Amiga community, and quite a few people were considering selling their systems and moving to the PC world. If Commodore can follow through on even half of the above, I think their place in the computer market will be assured.

Of course, Commodore weren't the only exhibitors at the World of Commodore Show; it was jam-packed with third party vendors displaying their latest creations. Of particular note was DMI's new JPEG video board which will let you record up to half an hour of realtime video onto your hard disk (if it's 1 Gb!), digitally edit it, and then play it back in realtime. This opens up tremendous possibilities, both for videographers and animators (since Amiga animations can now be played back in realtime, regardless of the length and complexity, making it much easier to record onto video.) All this for just $2,499.

Also of note was GVP's new PhonePak which provides full voicemail and fax facilities for around $395. And of course, there were Amiga 4000's everywhere, running the first AGA-compatible programs (*Art Department Professional V2.0* from ASDG and *FinalCopy II* from Softwood.) Commodore also announced *AmigaVision Professional V3.0*, an upgrade to *AmigaVision* that includes full CDTV support among other new features.

One other event I heard about was that Commodore presented Jay Miner (the father of the Amiga, who designed the original chipset) with the first production Amiga 4000. Though Jay left Commodore some time ago to return to his work in the medical computer field, he is still a big Amiga fan, so this was a nice gesture. (Jay said in a message on his Amiga BBS that he had been trying to figure out a way to convince his wife they needed an A4000 after seeing it at the show.)

All in all, it sounded like a great show. There is another World of Commodore show in December, this time in Toronto, and perhaps this will bring even more news. If it does, you'll hear all about it in the January issue. Until then, happy computing and don't eat too much pudding on Christmas day!

E.C.

The Amiga 4000

by Eddy Carroll

In September 1991 at the European Developers Conference in Milan, developers were treated to a first look at the new Amiga graphics shipset, then known as the *AA Chipset* (AA standing for Advanced Amiga). Now, just over a year later, the first machines featuring that new chipset have arrived: the Amiga 1200 (see elsewhere) and Amiga 4000.

For some months, I had been trying to figure out a way to convince myself that I needed a 68040 card for my A3000 to give it a speed boost. Now, for little more than the price of one of those cards, I could get a brand new computer. I was sold. Two other CUGI members, Leon Hurst and Rocco Matassa also fell under the A4000's spell and we placed the three orders together. The machines arrived on 13 October.

Let's Get Physical

Physically, the A4000 is somewhere between the sleek lines of the A3000 and the ugly utility of the A2000. Its dimensions are 15″×15″×5″ and it is enclosed in a metal case capable of supporting a monitor. Inside are a 5 1/4″ drive bay and four low-profile 3 1/2″ bays. Two of the latter are already occupied with a high-density 1.76 Mb floppy drive and 120 Mb IDE Seagate hard drive. A vertically mounted backplane provides four Zorro III 32 bit slots, which are in line with three IBM AT slots and an enhanced video slot.

All these slots are fully backwards compatible with those found in the A2000 and A3000, making it easy to move cards across from an older system. In my case, I had an A2386 Bridgeboard and PC VGA card from my A3000, and I had also purchased a second-hand A2091 SCSI controller and A2320 Display Enhancer (for reasons that will become apparent). The other device I had was a 520 Mb 3 1/2″ Fujitsu SCSI drive, and for the time being, I elected to mount this in the 5 1/4″ bay.

The only glitch that arose with all this hardware was that the A2091 needed a ROM upgrade, since it didn't understand 32 bit memory and would hang the system while booting. Once I had obtained the necessary chips, the system worked fine.

So much for my personal setup. What does the A4000 offer over, say, an A3000? The differences in the A4000 can be summed up as follows:

- 25 MHz 68040 CPU instead of 68030
- 4 megs of fast RAM, 2 megs of CHIP ram
- AGA Advanced Graphics Architecture (previously AA) chipset
- Kickstart 3.0 and Workbench 3.0 as standard
- 1.76 Mb floppy drive instead of 880K drive
- IDE hard disk interface instead of SCSI
- Three IBM AT slots instead of two
- CPU on a removable daughter card for easy upgrades
- Memory can be upgraded to 18 Mb using SIMM modules instead of ZIPs
- 5 1/4″ bay allows CD-ROM or Tape Drive to be installed
- Keyboard lock on the front of the case
- Keyboard uses a slimline connector
- New, contoured mouse to fit the hand more comfortably
- Mouse ports on the left side of the case
- No 15 pin VGA video connector (though a 23 pin to 15 pin converter plug is included)
- No display enhancer (AGA makes it mostly redundant)

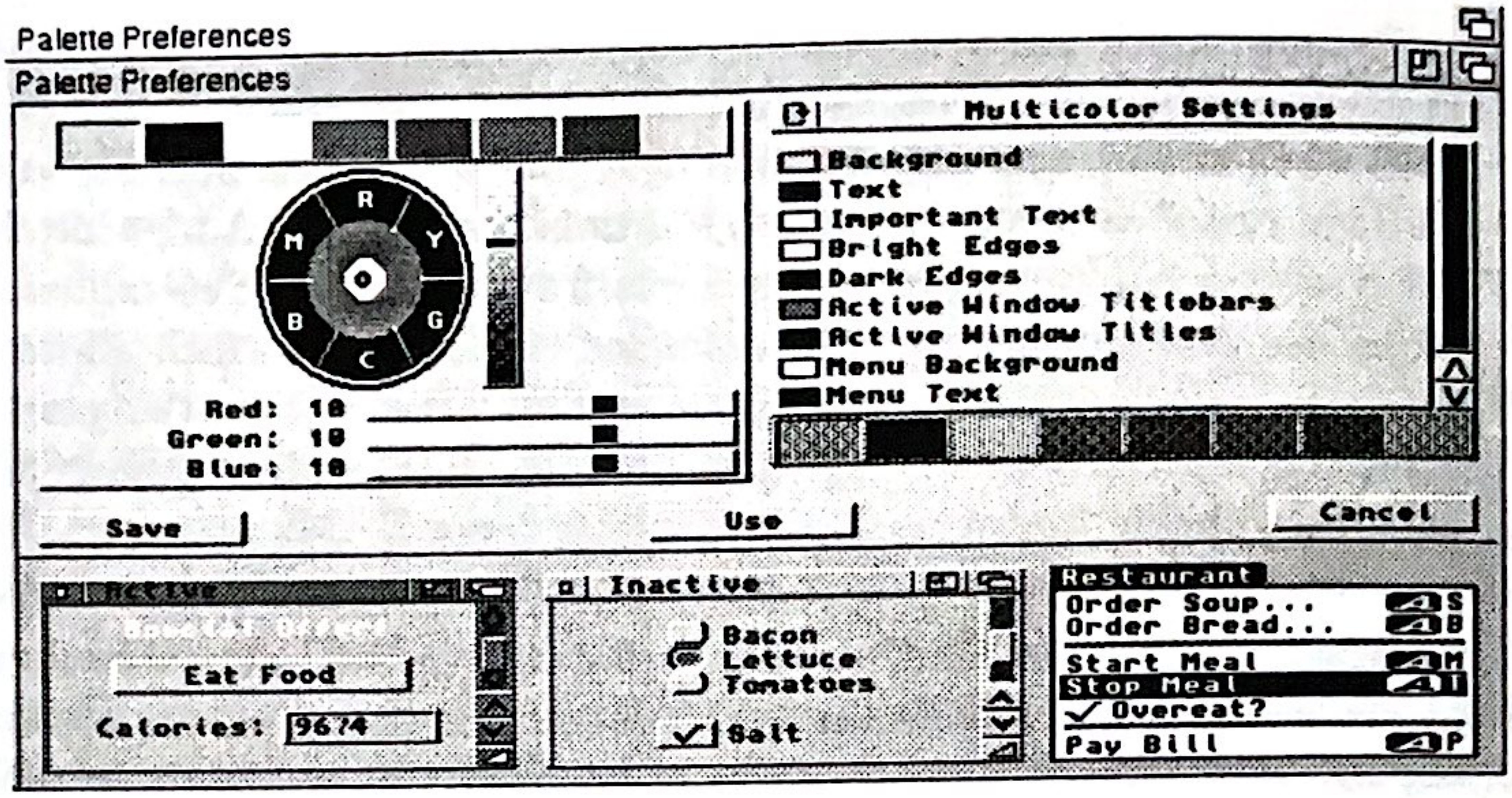
By now, much has been written about the AGA chipset, but it's worth mentioning the main features once more. It supports resolutions up to 1280 × 512 at 25 Hz interlace, including 640 × 480 at 72 Hz and 800 × 600 at 36 Hz interlace (which flickers much less than the standard Amiga interlace). All resolutions now support 256 colours from a palette of 16 million, and all modes now support the new extended HAM8 mode which allows over 256,000 simultaneous colours from 16 million. HAM8 is nothing short of stunning, especially at the higher resolutions, and for most people will be indistinguishable from true 24 bit graphics. Since HAM8 only uses the the same bandwidth as a 256 colour screen, it will be very useful for animation.

Other AGA features include enhanced sprites, which can now be up to 64 pixels wide and be displayed in lowres, highres or super-highres resolution, regardless of the screen mode and a new scan-doubling feature to make it easy to display lowres screens on a VGA monitor (similar to the A2320 Display Enhancer). And finally, all AGA modes take up only 1/4 of the video bandwidth of the equivalent ECS modes, which means that previously CPU-hungry modes like 640 × 512 in 16 colours now zip along.

So, if this last point is true and the display enhancer is now redundant, why then did I feel it necessary to spend £100 on an A2320? Well, my A3000 monitor was a very nice Hitachi SuperScan multisync which unfortunately can't sync down to 15 kHz, the scanrate used by most Amigas. On the A3000, this wasn't a problem since the built-in display enhancer ensured that the output was always 31 kHz, regardless of screen mode.

While Kickstart 3.0 on the A4000 can do the same thing, it only works for programs that use the operating system; games and demos that take over the machine will still operate at 15 kHz mode. In addition, Guru Meditation errors and the new Kickstart 3.0 Boot Menu are displayed at 15 kHz. On a Commodore 1960 or similar multisync, none of this would be a problem, since they can quite happily display 15 kHz. However, since I like to play the occasional game, I decided the display enhancer would be a good investment. The only disadvantage of the display enhancer is that it can only output 4096 colours instead of 16 million, but it is quite happy to do this at 640 × 480 non-interlace, and the results are really very impressive. And of course, the original output is also there if I need it.

The other card I purchased was the A2091 SCSI disk controller, which I needed because the A4000 has no SCSI controller as standard (a major oversight in the view of most people; IDE is cheaper, but significantly less flexible). Commodore have said that they will have a Zorro III-based SCSI II controller available some time around January which I intend to upgrade to immediately; I view the A2091 as merely an interim step.



Red: 10
Green: 10
Blue: 10

Calories: 9674

The new Workbench 3.0 Colour Preferences Screen

Apart from AGA, the most noticeable difference with the A4000 is Kickstart 3.0. This fully supports all the features of AGA, and large parts of the low-level *graphics.library* have been rewritten to increase speed and add features. It incorporates all the features of Workbench 2.1 (soon to be released for existing owners), such as localisation support, built-in *CrossDos* for accessing 720K and 1.44 Mb PC disks, more flexible device handling, and a PostScript printer driver.

Workbench 3.0 also includes a new multimedia file viewer called *MultiView* which can handle a variety of file types, including IFF images, sounds, *AmigaGuide* help files, ASCII text, and so on. The best thing about *MultiView* is that it is extensible—it makes use of one of the new features of Kickstart 3.0, the *datatypes.library*, which allows additional data types to be defined and added by third parties. Any application program can use *datatypes.library*, and will then automatically gain access to future formats.

As a simple example of the kind of thing this implies, imagine a paint program that uses the picture type in *datatypes.library*. Initially, sub-types IFF and GIF might be defined, so the program could automatically read and write images of those types. Later on, you might add JPEG, BMP and TIFF files; with no changes to the code, the paint program would now be able to handle those filetypes as well. The same applies to sound, text, animations, and so on. The possibilities are endless.

Another nice feature of Workbench 3.0 is the new Palette preferences editor. This now features a colour wheel to allow colour selection as well as the more familiar RGB sliders. In addition, the colour of each screen element (menu bar, menu highlight, window border, etc.) can now be chosen individually. Also improved is the Workbench pattern editor, which now offers the capability to install a picture of your choice as a backdrop to your Workbench. If Workbench has fewer colours than your picture, it will be automatically dithered to display a good approximation. Even the mouse pointer has been beefed up, and can now appear in high resolution, removing that chunky look that has so identified it in the past.

Other changes are more subtle. The *layers.library* that handles overlapping windows has been greatly optimised, removing almost all the delays that used to occur if you had a lot of windows on the screen. All bitmaps are now interleaved where possible, a technique borrowed from the games world which can greatly enhance graphics performance (since the blitter can do in one operation what used to take two or three). All in all, Workbench 3.0 is a very nice upgrade indeed.

All this is very nice, you say, *but what about speed?* This is, of course, the jewel in the crown of the A4000; it is awesomely fast. Overall, it rates about 3 times the speed of my A3000 on most tasks, which makes it about 20 times faster than your average A500 or A2000. For floating point work, the gains are even more impressive: one benchmark (a ray-traced beach ball, from LaMonte Koop's *AIBB* benchmark suite) runs a stunning 550 times faster than an A500! Leon, who uses his A4000 for ray-tracing with *Imagine*, reports that some of his pictures are generated over 200 times faster, and the output in HAM8 is a huge improvement over HAM.

So, is this finally the perfect Amiga? Well, no. It has a lot of great features, but also some significant ommissions: no DSP and no onboard SCSI. Commodore has said it's aware of both these failings and is actively working to provide solutions in each area within a few months. A better solution for users with non-15 kHz monitors is also required, since those monitors are now becoming very cheap in comparison to other displays. Overall though, this is the Amiga you've always dreamed off.

The only thing to marr this otherwise perfect picture is that there seems to be a reliability problem. Out of the three that arrived in Ireland, Rocco's had a faulty CHOP RAM SIMM module (he managed to do a swap at the Developers Conference that weekend, which was handy), and mine stopped working completely after about two weeks. I'm currently waiting for it to be collected by Commodore and replaced, but no sign of anything yet. I am typing this review on an Amiga 1500 which, more than anything, is giving me a good impression of how fast the Amiga 4000 really is!

Techno Sound Turbo

by Kieran Tully

This product from New Dimensions is a sound digitiser, or as it is more commonly known, a sound sampler. A sound sampler is a device which does the opposite of what the sound chip in your Amiga does. Instead of changing digital information into analogue sound, a sound sampler converts sound back into a digital form, allowing you to capture almost any sound and play it back on your Amiga, for use in a sequencer or just to amuse your friends.

Inside the box there is a thin but useful manual, which consists mainly of reference material and one tutorial, the hardware and an audio lead, suitable for connection to a small earphone socket.

Hardware

This is a small (3″× 2″) rectangular box, that connects to your parallel port. It has two audio inputs, and a (short!) lead is included to connect these to a small earphone socket plug. It is a stereo 8 bit sampler, although it can be used to sample sounds in 4 bits as well.

The sampler's maximum frequency (as quoted in the manual) is 98.5 kHz, but in practice, the bundled software only allows a maximum of 57.207 kHz in 8 bit mono mode. The maximum in 8 bit stereo is 33 kHz, and no, the frequency range allowed by the software in 4 bit mode is not greater (as you might expect) but less.

While we're on the subject of bits and hertz, I suppose I'd better explain them. *Hertz* measure the frequency at which a sound is sampled. A higher frequency means that there is more information read in for every second of the sound, which in turn implies that the sound is clearer, but also takes up more memory. Similarily, a sound sampled in 4 bits at 20 kHz will not be as sharp as a sound sampled in 8 bits at 20 kHz, and will take up less memory. For example, a 5 second sample at 20 kHz will take up 100K of memory at 8 bits, or 200K at 16 bits. Currently, the Amiga has 8 bit sound; a CD player has 16 bit sound and the new Amigas will at some stage have 16 bit sound, bringing them up to CD quality.

Software

The software consists of some example pre-recorded samples, a 'demo-player' utility, and some sampling and editing software. The pre-recorded samples serve no use at all; except to take up disk space, and to show what is possible under optimum conditions. The demo-player is a small program that will play back a sequence of music composed in the editing software, whilst displaying a title picture that has to be stored in a raw format (which makes it totally useless for the novice, who is probably only familiar with IFF).

The editing and sampling software allows you to cut and paste the sample to your heart's content. It also allows you to create sequences of music, with samples or MIDI instruments using the built-in sequencer. Although it works, I for one will stick to dedicated packages like *SoundTracker* or *OctaMED*.

The software also allows you to perform a variety of special effects on your samples in real time, or on samples that are already in memory. The real time effects, which can *only* be performed on a sound source that is going to be played straight back through your speaker, and not saved to disk or memory in their edited state, are:

Voice Effects

DALEK	**Makes your speech sound like a Dalek**
EXTERMINATOR	**Makes speech sound sinister and scary**
VOICE SYNTHESIS	**Makes your voice squeaky like Mickey Mouse**
INTOXICATION	**Makes speech sound as if you've have been drinking**
LEGLESS	**Another variation on the INTOXICATION theme**
STEREO ECHO	**Echos speech between the two speakers—very spooky!**
MEGA ECHO	**Again in stereo, this one fills the room**
USER ECHO	**Lets you control the echo parameters more directly**

Musical Effects

ECHO	**I'll let you guess this one**
REVERB	**Echos each sound, creating a nice effect**
HALL	**A more emphatic REVERB (big hall sound)**
ROOM	**Another reverb function**
THRU	**Passes the input straight through the speakers**
VIBRATO	**Vibrates the music by varying the pitch slightly**
PHASER	**Ruins the music!**

These effects are useful for home karaoke, or listening to your favourite record in a new way, but they really only have novelty value.

The effects that can be performed on samples in memory are mostly the same with a few more included like AMP (ups the volume of the sample) and SOFT (opposite of AMP). There is also an option to filter the sound, removing some hiss, though this is a low pass filter similiar to the awful Amiga hardware one and tends to reduce sample clarity if overused.

Problems

Personally, I only use the software for the real-time effects, and stick to *AudioMaster* for editing. I really think the programmer of this package should have concentrated more on the editing and sampling part of the package and on improving the dreadful file-requester, rather than adding features such as a MIDI sequencer and a demo player.

Currently the software has been used with three different samplers with just a different palette. The software is at V2.9 (I'm glad I don't have V1.0). Sometimes it refuses to load samples properly and plays samples in a weird way.

Conclusion

The cartridge gives good quality results for its price. The software goes in the bin, but I would still recommend this as a good introduction to the world of sampling. R.R.P. is Stg£39.95, though it can easily be obtained for £29. TechnoSound II is on the way, including such features as direct to (hard) disk recording, and possibly a 12 bit cartridge, so it may be worth holding on a while if you intend buying a sampler.

Supra V32bis FaxModem

by James Ruane

Until recently, I was satisfied with my modem. A V22bis (2400 baud) run-of-the mill no frills type, it did its job; not particularly well, but it did it. However, I began to get irritated with the speed of it. 2400 baud is fast becoming the minimum for communications, and then perhaps only for mail reading and small to medium file transfers.

I transfer large files on a regular basis, as I'm a FidoNet point (for more information on FidoNet and 'points' please see my article in the April 1992 Newsletter). This involves transferring about a megabyte of Mail packets a week, at about 250K per session. This was rapidly getting on my nerves. Also, I was frustrated at the 300K+ files appearing on many BBS's which took irritatingly long to transfer. Unfortunately, a decent 9600 baud modem looked out of reach of my pocket, most of them weighing in at well over Stg£400!

However, at the beginning of this year, Supra Inc. released its newest modem. Supra already produce 2400 baud modems, as well as hard disk controllers, RAM boards and various other peripherals. It boasted impressive performance: V32bis as its main connection type, outspeeding my 2400 baud modem by 600%! It also had a number of error correction and data compression protocols, including MNP levels 1 to 10, V42 and V42bis. Not only that, but it sported the capability to send and receive faxes. The best thing was the price. It came in at under Stg£300!

I was not the only CUGI Member looking with envious eyes at these lovely new modems. It emerged that at least two others wanted to buy one as well. So, we joined forces and searched around for a good deal. After much waiting, basically because Supra couldn't make enough of the FaxModems to satisfy demand, we eventually got our modems.

Good Things Come in Small Packages

The first thing I was struck by when I opened the colourful and surprisingly small box was the size of the modem. It was about six inches long by four inches wide and one inch high! This was considerably smaller then my 2400 baud modem! Part of the reason for this is the external PSU, which looks like one of those multi-transformers, as it has 4 plugs of varying sizes. This is due to the fact that the modem was purchased in England, where a different PSU is needed than in the USA. I reckon the PSU I got was just one the Supra UK distributor got locally. It appears to have had lots of stickers removed, unsurprisingly. The worrying thing is that the PSU has lots of switches on it, which if accidentally moved could have dire consequences to the modem.

Also in the box were three manuals and a quick reference card, *A-Talk III* (a comms program) and most importantly, an Amiga modem cable. The last item quickly interfaced the Amiga and Supra FaxModem. I hit the power button and the LED display on the front greeted me with `OK`. I booted *NComm* and logged onto DecBBS. I connected to Declan's HST Dual Standard at V32bis (14400 baud) and had V42bis Error Correction. The ANSI screens appeared almost instantly. The full screen editor was very usable.

The Need for Speed

Then I tried some file transfers. I could get 1650 cps on average on archived files and about 1800 cps on average with text files. This means that a 250K file takes about 2½ minutes to transfer. At 2400 baud, it would take almost 20 minutes! This speedup is due to the V42 Error Correction and V42Bis Data Compression, along with the increased connection speed of the modem itself. The modem receives data from the computer at 19200 baud and sends it as fast as possible. This means that the modem can operate at more than 100% efficiency! (*Er... I think you mean it can send data faster than 14,400 bps—Ed.)*

The fax part of the modem is another major plus. Using the Supra and suitable fax software, you can send faxes to anywhere in the world without leaving the room. Suitable software is easy to obtain.

In use, the modem has proved extremely good. The ROM I got in mine was V1.2, a definite improvement over the 1.0 ROM which had quite a few bugs. I can connect to most BBS's in Dublin at V32, and many at V32bis. I obtain about 1500 cps connecting to Infomatique and TOPPSI, and about 1650 cps when on DecBBS. This is due to the varying line quality. However, for all their faults, Telecom Eireann's lines seem to be able to handle 14400 baud communications very well, contrary to popular belief.

This is due in part to the various error correction and data compression protocols fitted to the modem. It has the top-of-the range V42bis data compression which can compress files by up to 50%. This is only useful on uncompressed files such as text or unarchived binaries. Files compressed with *LHA*, *PowerPacker* or any of the other compression programs won't compress further. Also fitted is MNP 5 data compression. This is like V42bis, although it lacks some of the latter's features, such as the ability to detect when the files being transferred are compressed, and avoid trying to compress them further. For error correction, the modem has V42 and MNP levels 1 to 4. They are all basically similar in terms of what they do, with MNP 1 being the least efficient and V42 being the best. Finally, the new MNP level 10 data compression is also available and is meant to be even more efficient than V42bis; not very many other modems support this yet, however.

Conclusion

Overall, the SupraFaxModem is excellent. It has several nice features, including the LED display at the front which shows one of 14 codes to inform the user of what the modem is currently doing. Another nice feature is that you can connect your phone through the back of the modem and use the modem as an AutoDialler. The speed is impressive, as is the modem's ease of use. Also, compared to most of the high speed modems out there, it is very cheap. As a matter of fact, it's cheaper then buying a 2400 baud modem locally! So, I'd have to say that the SupraFaxModem gets my unqualified approval.

The Amiga 1200

by Eddy Carroll

The A1200 is in many ways the A4000's little brother. This is not a review as such (that will have to wait until one of our members has had a chance to play with one for a while), just a summary of features to try and dispel some of the rumours and myths that have been flying around. In essence, the A1200 is an A600-style console with the following features:

- 68EC020 CPU at 14.28 MHz
- AGA Chipset as standard
- 2 Mb of 32 bit CHIP ram
- PCMCIA credit card connector
- 150 pin 32 bit trapdoor expansion connector
- Internal IDE connector for 2.5″ hard drive
- 880K floppy drive
- Numeric keypad (as on the A500)
- Built-in TV modulator for connection to a TV
- Space on the PCB for a 68881 FPU (though no socket)

So what are the implications of the above? The 68EC020 (which is identical to the 68020, except that it can only address 16 Mb of memory and can't have an MMU added) will provide at least a 2× increase in speed over the standard A500, and with some fast 32 bit RAM added in, this will jump to a 4–5× performance increase.

The AGA chipset gives the A1200 all the graphics capabilities of the A4000 discussed earlier, and should help it to become a real killer games system. Commodore say some of the major games companies have already committed to writing AGA-specific games.

The most useful feature will probably turn out to be the 150 pin expansion connector, which will allow the addition of 4 Mb of fast 32 bit RAM, accelerator cards, DSP, SCSI interface, bridgeboard and much more. A knock-out panel at the back of the computer has thoughtfully been provided to house additional SCSI or DSP connectors for such cards. An additional 4 Mb of RAM can also be added via PCMCIA, though this will only be 16 bit.

Best of all is the price: in town, the A1200 is selling for £449, and if you get it through CUGI, it will be even less than that! Overall, I think Commodore have a real winner on their hands.

The Spirit InMate—Tales of Woe

by James Ruane

When I first got my Amiga 500, at Christmas 1990, the half meg of RAM fitted seemed like all I'd ever need, having upgraded from a Commodore 64. By September of that year, however, the half meg was proving sorely lacking. *Kindwords* refused to print, displaying "Out of Memory" errors on a regular basis, and as for Workbench... Well, let's just say that I wasn't doing much work with it. Even some *games* wouldn't load! Time for a memory upgrade.

The Hunt

A prowl through the pages of the Amiga mags and a conversation with Geoff led me to the conclusion that a simple upgrade to one meg wouldn't be enough. I was looking to the future and so wanted a board I could expand. I was going to get the Ashcom 1.8 meg board but then I noticed a half-page ad for Bytes 'n' Pieces in *Amiga Format*. They were advertising the Fat Trapper. It was a FOUR meg board, and seemed to me a lot better then the Ashcom. In addition, it was slightly cheaper in the long run.

So, I rang Bytes 'n' Pieces the next day. "Oh, the Fat Trapper," they said. "It's been withdrawn. It doesn't work with *DPaint*." My smile at the thought of a more capable Amiga faded. "However, it's been replaced by the Spirit InMate." My smile returned.

Two days later a catalogue arrived from Bytes 'n' Pieces. I turned to the page advertising the InMate. The specs were pretty impressive:

- 1 to 8 megs of FAST RAM
- 68881 maths co-processor
- SCSI hard disk controller

And it had a price to match: Stg£299 for the board with 2 megs and a 16 MHz 68881. Faced with the choice of an InMate that worked or a half meg Amiga that now seemed not to want to, I plumped for the InMate. Bytes 'n' Pieces were duly rung and the board ordered. "There will be a delay of two to four weeks until we can ship the board," they said. "Fine," I replied.

Two weeks came and went. Four weeks came and went. Then December came and so did a fax from Bytes 'n' Pieces. It read:

> "Due to supply problems at Spirit, they have had to up the price of the board. It will now be £275 with no memory. However, we told

> them that we had already advertised the board at £299. They agreed to sell us the boards that had already been ordered at the reduced price. However, we will have to increase the price to you by £36. For this increase, you will get a 20 MHz co-processor, instead of a 16 MHz one. As time is tight, we hope to have the board shipping before Christmas."

Installation

Well, Christmas came and went. Finally, in mid January, the InMate arrived. Upon opening the box, I found a 6″ × 6″ board that rather resembled an accelerator board. There was also a software support disk (with *Preliminary* stamped across it) and a manual made up of 20 or so A4 pages stapled together flimsily. Oh, and there were two packets of RAM chips. Yes, Bytes 'n' Pieces didn't bother to configure the board. A quick phone call and an electronic engineer friend arrived. We disassembled the Amiga—luckily it was over a year old and so had no warranty left.

Now, find the 68000. "It's that big long thing," said my friend knowledgeably, as he levered it out with a screwdriver. The InMate popped into the space just vacated by the 68000. However, it then promptly popped back out again. Then I noticed 2 screws and nylon spacers in the InMate box. These went into holes in the InMate and Amiga motherboard. The InMate seemed to be more sedentary.

In went the power cable and in went the keyboard. Then a quick switch-on and nothing. Nothing! Just a blinking capslock key. We turned off the power and inspected the board. It didn't appear damaged. It was seated okay. Retry the power. Still nothing. The manual was consulted:

> "If the power light comes on and the capslock key flashes a number of times without the Workbench prompt appearing and the drive commencing stepping, then the InMate is broken. Immediately turn off the power and consult your dealer."

I consulted my dealer. Bytes 'n' Pieces confirmed that the InMate was indeed broken. I put it in the post and a few days later received it back. It was re-installed and power was applied. A Workbench prompt appeared and *Kramden Utilities* confirmed the presence of the additional memory.

"So the memory is working," I said to myself. Next, I decided to see what else this board had to offer. I loaded up *SysInfo* by Nic Wilson and perused its output. It detected the extra memory, and also spotted what it thought was a Zorro II board installed (a good trick on an Amiga 500 with no Zorro II slots).

Only *SystemInformation* by Paul Kolenbrander actually recognises the board. It says:

```
              TECHNICAL SPECIFICATION

Config Device : 3024      / 0xbd0
Product Code  : 8         InMate Multifunction board (SCSI/FPP/Mem)
Manufacturer  : 2034      Spirit Technology Corp.
Serial Number : 0

              BOARD SPECIFICATIONS

Board not chained.                   Board has no space preference.
ROM Diagnostic vector is 0x8000      CONFIGME bit cleared.
Board not for memory free list.      SHUTUP bit cleared.
Memory Size:  64 KByte.              Board cannot be shut up.
Board Type: Zorro II standard.

              MEMORY SPECIFICATION

Driver        : 6330836 / 0x6099d4
Slot Address  : 233     / 0xe9       Board Address : 15269888 / 0xe90000
Slot Size     : 1       / 0x1        Board Size    : 65536    / 0x10000
```

And so I was happy—for 6 months at least. But you see, having 2.5 megs of memory has a slight problem; you have to fill it. And I was getting tired of swapping disks to fill it. So I decided to make use of the SCSI controller of the InMate.

I was offered a 90 meg Fujitsu SCSI drive at a good price. Before committing myself to buying it, I rang Bytes 'n' Pieces to be sure that it would work with the InMate. "Sure," they said, "We sell them ourselves and have had no problems with them." So I ordered it. The drive arrived and I was left to organise a casing. Since the InMate SCSI connector is so aligned that it is almost impossible to fit the drive with any degree of ease, I eventually plumped for a new Amiga 1500 to replace the worn-out A500. And yes, the A500 was more lethargic then we had previously thought. One day, I arrived at it to continue a word-processing task from the previous night. A flick of the switch on the 'brick' and nothing. A flashing capslock key and no Workbench prompt. I decided to remove the InMate. It came out easily and looked okay—no scorch marks anyway. With the original 68000 replaced, the A500 powered up and worked okay. The InMate was dead.

A phone call to Bytes 'n' Pieces ensued. They would take back the InMate and repair it. When I asked them about A1500 compatibility, they agreed to swap it for an A1500-type Nexus Hard Card. I sent the InMate by registered post.

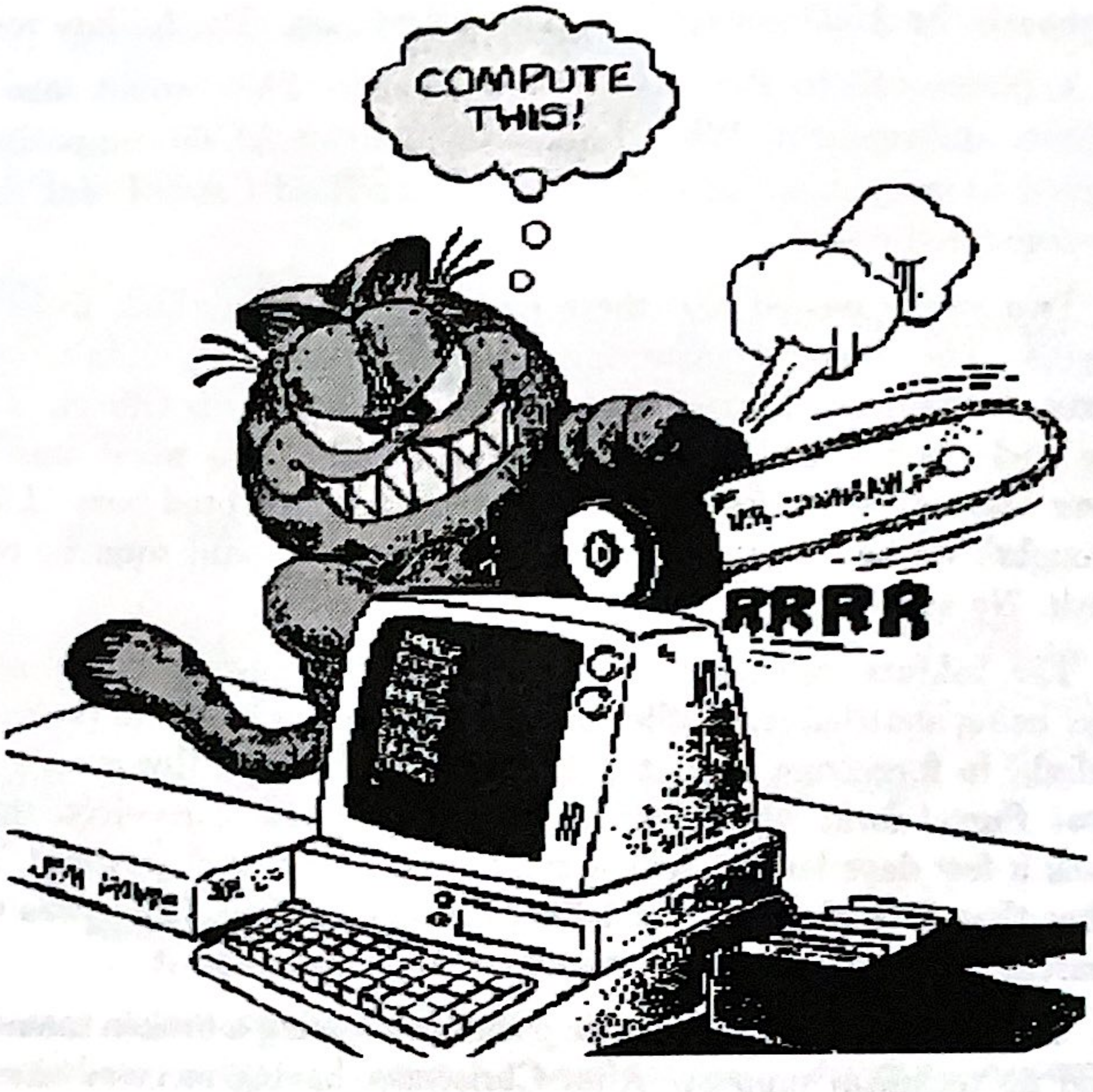
Two weeks passed and there was no sign of anything from Bytes 'n' Pieces. They weren't answering their phone and they didn't reply to my faxes. Undaunted, I faxed the local Trading Standards Officer. They faxed me back. Bytes 'n' Pieces were no more. What was worse was that they were also not accepting parcels. They hadn't accepted ours. Luckily (we thought) we had sent it registered post and it would soon be on its way back. No such luck.

The InMate was actually on a tour of the English Postal service. It was being shuttled from office to office by bureaucrats who took a perverse delight in forgetting that they had ever handled it. However, I did get a *Lost Parcel* form which I filled out and sent off. I received the InMate back a few days later, about a month and a half after posting! Two days after that, I received a letter telling me that the Post Office was very busy searching for our parcel and would no doubt soon find it...

This left me in the unenviable position of having a broken memory board and no technical support. After Christmas, having received the 1500, we contacted Spirit Technology. They are based in Salt Lake City, Utah, USA. They have some of the worst telephone operators I have ever had the misfortune to encounter. After getting them to promise to repair the board promptly and free of charge, they dropped a bombshell. They will only ship repaired boards via UPS. Ouch!

Having sent the board, I rang them again. They confirmed that they had actually received it. They also said that they would fix it "in one week". Four weeks and four trans-Atlantic phone calls later I was wondering what "one week" meant in Utah. They did eventually return the board, with what they called an "updated ROM". Strangely, it had the same version number as the one fitted originally.

At CUGI one night, Tom and myself set to fitting the board to the A1500. It said in the manual that the board should fit in the A1500 alright and I had personally been assured that the board would fit. Suffice to say it didn't. It kept popping up. Another phone call to Spirit resulted in a new adaptor socket being shipped to me. It prevented the InMate from popping out of the 68000 socket. The InMate was now pushing up against the bottom of the A1500's drive frame. However, that didn't seem to matter.



There's more than one way to solve a hardware problem

After powering up and booting with Kickstart 2.0, we discovered the presence of 5 megs of RAM in the system. This was strange as the InMate only had 256 × 4 chips fitted giving what I thought was 2 megs on board. After a reset, the Amiga thought it had 3 megs of RAM. "Aha! An InMate ROM bug under 2.0." I could live with that, but I wrote to Spirit anyway looking for the latest ROM version.

I was now ready to fit the hard drive, which I had had since September. It was now just before Easter. I installed it in the 5¼″ drive bay of the A1500. I popped the InMate Software Support floppy in the drive and started HDConfig. Up popped a requester with "No Hard Drive Found" and then the program quit. I tried again. Nothing. I reset. I checked the Amiga. I checked the SCSI connector. I checked the cables. Aha! A hole in the SCSI cable! I need a new cable.

Luckily I was able to bring the entire computer to a CUGI committee meeting where the InMate was tested with a pre-formatted 180 meg Fujitsu SCSI drive. Nothing. We came to the conclusion that the InMate didn't like Fujitsu drives. I rang Spirit again. I finally spoke to someone with something approaching intelligence. He said that he would ship me a new ROM that was "definitely" Fujitsu compatible. When I told him of my problem with 2.0, he told me that he would look into it and update the ROM, then ship it.

After Easter, the ROM finally arrived. I fitted it and tried the *HDConfig* software. Nothing. By now I was desperate. I decided to mess around with the DIP switches. I turned off the memory. I turned off the autoboot. I turned on the computer. *HDConfig* suddenly decided that, yes, there was a hard disk connected to the system.

The formatting software was primitive, but it allowed me to create two partitions, DH0: and DH1:, using the 2.0 FastFileSystem. Once they were formatted, I installed Workbench and reset. It didn't boot. Of course; the autoboot was turned off. I turned off the computer and turned on the memory and autoboot. The Workbench prompt didn't appear but after 15 or so seconds the hard disk began to click and Workbench booted. SetClock confirmed the date as the 1st of May. It had taken 9 months to get the hard disk fitted and setup.

Advice

So, as a seasoned Hard Disk User From Hell, I can give you some advice as to how to purchase the hard disk of your dreams.

1) Don't believe what the ad or dealer says, such as "Compatible with your Amiga setup" or "Works with all models of peripherals".
2) Don't buy it—it will save you lots of problems ordering it, setting it up and fixing it when it crashes.
3) Buy a system you have seen reviewed and/or in use.
4) Ensure that the distributor is based near you.
5) Buy a system from a company you have *heard* of.
6) Buy the controller and drive together.
7) Don't buy anything from Spirit Technology!
8) Don't deal with a US company—your phone bill will make you regret it.

In Use

Alright, I must admit that in use the InMate has been quite nice. Ths SCSI interface is fast. The co-processor feature is another handy extra (but not many programs make use of it). One thing I don't like is the type of chips used: 256 × 4 to give 2 megs of RAM or 1Mb×4 to give 8 megs. This means that you have to throw away the RAM chips you already have to upgrade from 2 to 4 or 8 megs of memory. Also, 1Mb×4 chips are quite expensive.

There is also the problem of heat build-up. On my A500, the case became uncomfortably warm after a few hours. Also, it is almost impossssible to route the SCSI cable out of an A500, especially if you have something at the side connector port.

The software provided with the board is austere. You get a *HDConfig* program, a program to check the presence of the ECS and a program to check if you want to disable the fast memory after every reset—except it doesn't work with the hard disk autoboot enabled. I am still waiting on the updated software promised me before Easter.

However, for all its faults, the InMate does all I ask of it. It provides a SCSI interface, memory and co-processor on one board. It has proved unreliable, as you may have noticed.

Conclusion

Can I recommend the InMate to you? The answer is, unfortunately, no. It is an unreliable board that has more faults than good features. It is also quite difficult to fit, especially with the amount of cabling required. It is not the easiest way to get the expansion capability it provides. It is also not the cheapest way, in more ways then one.

But, if you want to deal with idiot dealers, malfunctioning boards and incompatible "industry standard" hard disks, then be my guest. I promise you enough problems to send you to the verge of being made a permanent InMate of a lunatic asylum.

1500 Ways to Lose a Customer

by Tommy Gibbons

This is not in any way a humorous piece of text. I find no joy or satisfaction in the fact that my `£****.**` worth of computer has not got a working video port. "This is *the* computer for video," they said. "Buy it and take joy and pleasure in your creations," they said. Ten months later and these creations still remain on little 3½″ plastic floppy disks ready for transfer to the wide and wonderful world of television. "Woe is me," said someone or other.

This little anecdote started some years ago when I fell under the spell of exquisite graphic displays and a smooth talking salesman called Phillip (also known to other members of this club). The machine was in fact an

Amiga 500, along with a printer. Drove back to the sticks with this marvel of human technology. Everything went according to plan until the computer was powered up. *@&@!$@#$&**!!!. Exactly nothing.

Back to the shop, power pack failure. Okay, a new guy fixed it. Great! Back to the sticks. Months passed, memory and a disk drive followed. On an occasional visit to the shop (somewhere in Grafton Street) a fellow enthusiast mentioned that there was this fab, mega-brill, group of highly intelligent, down-to-earth, caring, we'll mind your kids while you go on a six month round the world cruise, club called CUGI out in Booterstown. Where? Never mind, I'll get there because I love my computer (and I don't know of any other clubs).

Great meeting, the first one; paid the membership fee straight off. These were guys that I could relate to. Absolutely nothing at the meeting was over my head, every word that was spoken was poetry in motion. More time elapsed. The arrival of an A590 hard disk, and later 2 megs of RAM was of great joy to the family (and bank manager). After two days trying to tease my way through the jungle of trying to figure out exactly which language the manual was written in, preping and formatting ensued.

*@&@!$@#$&**!!!. Exactly... again. Okay, back to the aforementioned shop. Another replacement followed and worked fine. Great, brill; at last some real computing power. But where is my niche? Games are great for a while, especially on a cold winters evening, but where is the challenge? Programming? Lots of people at that and anyway, you have to be intelligent for that sort of thing. Music? Speak up, sonny, I can't hear you! Graphics, oil and canvas masterpiece on computer... maybe, but no eye for beauty (except a pint of plain).

Animation was a last resort; the interest turned on. Some video titling and a simple animation explaining the concepts of how unity may be made up of fractions for my seven year old son brought interest from a totally unexpected quarter. Back at the ranch (club), Amiga 3000's and 1500's were everywhere, plugging in this and speeding up that, and 1 meg of CHIP RAM sent yours truly home crying, "I want some of that!"

December 3rd, 1991 the stork delivered (late) the last 1.3 Amiga 1500 to me. Everyone else was now getting Workbench 2.0. Never mind, I'll upgrade later if there is need, but first a hard disk and some fast RAM. Jan 92. I'll get a loan of the club's Commodore A2320 Genlock. Back home. *@&@!$@#$&**!!!. Exactly... again, again.

Next meeting, genlock is fine; your video port, not so. Ha, sucker! Commodore strikes again. Okay, we will take it back, they said. Months pass.

Workbench 2.04 out, no computer returned. A3000 falls in price (halved), no computer returned. The A4000 and Workbench 3.0 arrive, but not my replacement. Commodore boasts of only 1% to 2% failure rate in A600, and I record 100% failure rate in Commodore After-Sales Service. Never mind, Christmas is coming and the goose is getting fat, my computer is broken and out of date. Stop sniggering please.

Honestly, even though I am only a hobbyist and have limited experience of PC's, the Amiga is the computer for me. Commodore have probably the best computer in the world, but in their infinite wisdom, they overprice the machine (compared to PC's) and in my case offer what I call one of the most novel after-sales services world wide. Some day when I get out of here (they will let me out when I stop banging my head off the nice padded walls) this experience will just be another fond memory in a time when I can barely made out the images on the monitor.

AmigaMinix

by Karl Jeacle

Minix[1] is an operating system for small computer systems. It is currently available for the IBM PC, Atari ST, Apple Macintosh and, of course, the Commodore Amiga. It is supplied by Prentice-Hall and costs approximately Stg£125 ex VAT.

Inspired by Version 7 of the Unix[2] operating system, Minix (mini-Unix) was designed by Dr. Andrew Tanenbaum of the Vrije Universiteit in Amsterdam as a teaching aid for students taking his course in operating systems.

Since Minix was written completely from scratch and contains no AT&T source code, it falls outside of AT&T licensing restrictions, and its source code has been made widely available. Thus any interested party can study and modify the source code to the operating system as they wish.

What You Get

AmigaMinix comes on 9 disks and has a 700 page manual. This includes 150 manual (or 'man') pages and 400 pages of source code listings. The rest describes how to get Minix up and running on each of the machines it's available on.

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[1] Minix is a registered trademark of Prentice-Hall.

[2] Unix is a registered trademark of AT&T.

Four of the nine disks contain the operating system file systems, its binaries and the (K&R) C compiler, while another four contain the source code to all of these. The last disk is an Amiga boot disk which loads the Minix kernel into memory (The first eight are all in Minix's own disk format).

Minix comes with most of the standard utilities you'd get with Unix. These include the Bourne shell, *ed*, *vi*, *emacs*, and over 175 utilities such as *nroff*, *grep*, *make*, *sed*, *sort*, *split*, *tar*, and *wc*. These are all Minix implementations of the standard utilities, but are functionally equivalent. While some popular programs such as *csh*, *ksh* and *awk* are not supplied, public domain versions are available. And if the K&R C compiler isn't to your liking, there are commercial versions of ANSI-C, Pascal, and Modula-2.

Up and Running

The version supplied by Prentice-Hall is 1.5.10, although they just call it 1.5. They recommend a minimum of one floppy drive and 1 Mb of RAM. "A hard disk is not required (or even supported)," says the blurb. I can guarantee you however that running Minix from floppies is *not* a good idea. The Minix developers at the Vrije Universiteit have released several free updates to the code that Prentice-Hall supply, the latest of which (1.5.10.2) includes both CBM SCSI hard disk and 68020/030 support (no IDE or 68040 support yet, unfortunately).

Out of the box, Minix is pretty easy to get running. Just stick in the Amiga boot disk, and wait for the kernel to load into memory, then supply two Minix disks and you're ready to go. When Minix boots, it takes over the machine à la AMAX, so you can't access the Amiga OS at all. This is fair enough, considering your Amiga is now running under a completely different operating system.

At this stage, a "`Welcome to Minix`" message has appeared with a "`login:`" prompt. Now you're getting excited; you hurriedly shuffle through the manual to find out what the root password it. No joy. You keep searching... Eventually, you find out that you can login as 'ast' (Andrew S. Tanenbaum), with a password of 'Wachtwoord'. That'll do, you say, so you login as 'ast'.

Have a quick snoop around the file system, and then decide you want to set up an account for yourself, or mount a new disk or filesystem, or just about a million other things you need root access for.

Back to the manual to try and find the root password. Eventually you give up; it's just not there. Next stop, Usenet. The Frequently Asked Questions list in the Minix newsgroup is bound to have the answer to this one. Aha! FAQ No. 7: "What is the root password?" Answer: "It's in the book, on pages 373 (login 'ast') and 380 (login 'root'). If you didn't buy the book, that's only the start of your problems".

This was just too much. I had to go to Hodges Figgis and find "the book" just to get the root password. Irritating to say the least. Eventually I found it. The password was 'Geheim'—Dutch for 'secret'. I was almost amused. The book was *Operating Systems: Design and Implementation*, again published by Prentice-Hall, ISBN 0-13-637406-9.

Anyway, after all this, once you get logged in as root, the first thing you'll want to do is set up your hard disk. To do this, you'll need the 1.5.10.2 update. This is simply a new kernel image, so you can copy it over the existing one on your Amiga boot disk. Now when you boot, you get a list of partitions on your hard disk, and you can choose which one (if any) you want to mount as a filesystem.

Initially, you just use floppies as usual to get running. Then you have to do a little maths to work out how many blocks your hard disk partition takes. Be careful not to overwrite other Amiga data! When you suss this, you execute some nasty raw *mknod* and *mkfs* commands to initialise the filesystem on the hard disk.

None of this is for the faint hearted, and I guess you really need to know a little bit about Unix to know just what you're doing. Still, in the end, it's worth the struggle to get running off the hard disk. One other thing that you'd probably want to do is recompile the kernel (!) so that the root filesystem is no longer mounted as a RAM disk (/dev/ram). I haven't gotten around to this yet, so I've just written a few scripts to dump anything in RAM back to disk before shutdown.

All of the above probably has you thinking you'll steer well clear of Minix, but it's really not that bad. The best way to learn about using Unix/Minix is to get thrown in at the deep end and start hacking, and this is certainly the case here.

Availability and Further Information

The two easiest ways you can get your hands on AmigaMinix are as follows:

- Either direct from Prentice-Hall or by getting any major bookshop to order it from them. You should ask for *Minix* 1.5 *For The Amiga*, ISBN 0-13-585043-6, by Andrew S. Tanenbaum.
- From 'The Minix Centre', Forncett End, Nr. Norwich, Norfolk, England, NR16 1HT. Tel/Fax: 0044-953-789345.

You may also be able to find someone willing to sell it second-hand, especially if you are connected to Usenet or some such. I got my copy for IR£80 from the U.S.

Speaking of Usenet, as mentioned earlier there is a reasonably active newsgroup for Minix (`comp.os.minix`) where you can pick up some useful hints and tips. The "Frequently Asked Questions" list posted there is handy. Needless to say, if you have FTP access, you can pick up all kinds of goodies for Minix; you can even ftp software to set up your own Usenet connection—*uucp*, *bnews* & *vn* have all been ported to Minix.

The Minix Centre, mentioned above, offers good service and support for Minix users for Stg£45 ex VAT per year. They offer a 50-page quarterly newsletter along with 100–200 page printouts of discussion from Usenet. You also get a 20% discount on any goods bought from them. They supply Minix software on tape and all kinds of hardware (you can buy a complete turn-key Minix system). Software available includes: *MicroEMACs*, *RCS*, various GNU utilities including *gcc* & *g++*, and also programs such as *kermit*, *sc* and TEX.

While all this seems pretty good, I didn't sign up as I already have access to Usenet and the software prices, while reasonable, are way above media & handling charges. The software they supply is supposed to be free (well, freely distributable; free if you can ftp)! They do however, package things nicely—printed manuals and the like. Another point is that they are a little biased towards PC-Minix. Having said all that though, I would still recommend writing to them, to check out for yourself what they have to offer.

Conclusion

I bought Minix to learn a bit more about Unix, having just finished college and started a job which I thought would have me sitting in front of a Macintosh writing reports. To my surprise, I ended up being appointed Unix administrator!

Needless to say, after coming home from eight hours of Unix, sitting down with Minix was *not* too appealing an idea; because of this, I haven't gotten into Minix as much as I would have liked to.

However, if you don't have the above kind of exposure to Unix and would like to learn a little bit more about how it all works (or perhaps just want to log in as 'root' :-) then Minix is well worth considering.

1992 UK Developers Conference

by Eddy Carroll

Every year for the past three years, Commodore UK have organised a developers conference to give Amiga developers in the UK a chance to see new technology, get briefed on a variety of programming issues, show off their latest tricks and generally mingle with like-minded people. This year was no exception, and myself, Geoff Reeves and Rocco Matassa decided that we would treat ourselves to a weekend in the UK and increase our Amiga knowledge at the same time. As is normal at such events, the three of us signed non-disclosure agreements to prevent us discussing any secrets Commodore tell us about; in the event, most of what was covered was already public knowledge anyway.

The venue this year was Buxton (where?) which is situated about 60 miles from Chester. After a quick call to the travel agent and discovering that a return flight to Manchester Airport would set us back around £150 each, not to mention a long train journey afterwards, we decided to drive over on the car ferry; this worked out around £35 each and gave us the opportunity to see a bit of English countryside at a leisurely pace (Geoff and Rocco might disagree with that particular adjective).

So Who Has the Map?

The DevCon was kicking off on the evening of Friday, 16 October, and so we reckoned catching the morning ferry from Dublin Port would leave us plenty of time to drive the 130 miles. After an uneventful crossing, a brief stop at Chester for a meal, and an unexpected 20 mile diversion, we arrived safely in Buxton at about 7 PM and checked in. Although the DevCon itself was taking place in the luxurious Palace Hotel, we were checked into a different hotel a few minutes walk away (this worked out a bit cheaper).

Once we had dumped our bags, we headed to the Palace hotel and hunted down Commodore's Sharon McGuffie. Geoff and Rocco had met Sharon at shows in the past, but I had only spoken to her on the phone, so it was nice to finally be able to put a face to the name. We received name badges, and a pack containing a Commodore address book for taking notes, along with a set of Workbench 2.1 and 3.0 disks. After that, it was time for the opening dinner, which featured some excellent food.

The nearby computer room had a variety of Amiga 1500's, 4000's and CDTV's setup for developers to play with, so after the meal we made a beeline for it. It was here that we met up with some of our contacts from ICPUG, most notably the charming John & Janet Bickerstaff, and Pete

Miles, the Amiga Librarian. Other developers of note we spoke to or noticed included Jolyon Ralph (a name familiar to *JAM* readers), a guy from DMA Design who was wearing a snazzy *Lemmings World Tour 1992 Road Crew* tee-shirt, and the developer of *WordWorth*.

There were miscellaneous Commodore people there as well, including David Pocock from CATS UK, Carolyn Scheppner from CATS US, John Cambell (Vice President of CATS, I think) and Carl Sassenrath (the author of *exec.library*, and now working as an independent contractor for Commodore). I also spotted Steve Beats and Andy Finkel, two other names long associated with Commodore. After chatting with developers for a few hours, Geoff, Rocco and myself decided a good night's rest was in order and so we headed back to the hotel.

Early to Bed, Early to Rise

Saturday had a fairly packed agenda, kicking off at 9:45 AM with the introductory session. After the usual "Thank you for coming, we hope you have a great weekend" remarks, it was over to John Campbell for details about Commodore's new machines, plans and future. Before the talk, he didn't look very approachable (he was even dressed in a suit) but his talk was interesting and well-delivered. Much of what he said has already been covered in this month's editorial; he also re-affirmed Commodore's committment to CDTV, and announced that CATS US will start monitoring the developer conferences on CIX to allow much more direct communication between Commodore US and UK developers. He also mentioned his confidence in the new leadership of Louis Eggebrecht, and said that Commodore now have a new philosophy of openness.

After a short coffee break, we returned to the main hall for the first third-party talk on 24 bit Graphics; despite some interesting hardware to demonstrate, it wasn't terribly exciting. Also taking place next door was a talk on Optonicia's new *InterPlay* system for the CDTV, and in fact, for most of the remainder of the weekend, two talks took place simultaneously. Though the three of us had originally decided to try and cover every talk if possible, in the end, we only split up for one of them.

Before lunch, Carl Sassenrath brought us up to date on new CDTV developments. He was pretty enthusiastic about the possibilities with CDTV, and mentioned how he had originally approached Commodore with such an idea in 1986, shortly after Commodore bought Amiga. CBM didn't think much of the idea back then, and Carl went to work for Apple for a few years, before he started working on CDTV development.

He had some fairly interesting hardware and software to demonstrate, such as a PAL version of the CDTV Video card (aka DCTV in its Amiga guise) which is expected to be on the market here very shortly. This allows up to 2 million colours to be displayed while using only the bandwidth of a 3 or 4 bitplane highres display. He also demonstrated a nice frame-grabber which could grab video from a live source and record it onto disk at frame rates suitable for playing back on CDTV using quarter-screen CD-XL video.

The most interesting item was the software Carl has developed which allows an entire video/audio sequence to be developed and then played back. Demonstrations of this in action included a CDTV version of a Federal Express ad and an industrial training disc. The ad was impressive, because it managed to hide the fact that the video was only quarter-screen very well, by shifting it around the screen, switching from one still to another, etc, all with full audio. Carl stressed the importance of small program size on CDTV, due to the limited memory available.

The Bad, the Good & the Ugly

After a tasty lunch, we regrettably chose to attend the C/Pascal/Assembler talk (which could have been subtitled "Look at all the language products you can buy from HiSoft."). Carolyn Scheppner's session on development tools which followed proved a lot more interesting; as well as new development tools (such as the 68040 version of *Enforcer*) and *ToolMaker*, the applications builder, she also discussed the new features in Kickstart 3.0, and had plenty of example images and animations to show them off.

Particularly nice are the double-buffering support (making it easy to run animations on a slidable screen with Intuition menus), palette sharing (allowing several 256 colour pictures to be displayed on your Workbench screen with intelligent allocation of colours to each picture), and attached screens (where a small screen can be attached to a larger one, with the two treated as a single unit; look at the tool screen in *DigiPaint 3* or the palette screen in *DPaint IV* for examples of where this might be useful). Carolyn also gave a quick overview of Commodore Engineering; I was quite surprised to learn that there are 175 people in the group in total, divided between Chipset Design, Hardware Architecture, Systems Group, Software OS, CATS, Documentation and QA (plus one or two others I've forgotten.)

After another break (at this stage, it was after 6:00 PM), there was an open session for developer's questions. There were quite a few developers present who were not afraid to speak their minds. CDTV came under heavy criticism for Commodore's lack of marketing, and concern was expressed about the new AGA machines, and Commodore's new policy of not releasing hardware information to allow them to be programmed by bypassing the operating system. Our esteemed CUGI chairman had a few words to say about Commodore's lack of credit card facilities for orders (requiring payment up front instead) but didn't get much joy.

After yet another tasty meal, there was supposed to be a "Late Night Diversion" with Perry Huber, but unfortunately, he couldn't make it. A last minute attempt to borrow a VCR to show a demo of ASDG's *MorphPlus* morphing package also failed (isn't it nice to know CUGI isn't the only organisation that has these sorts of problems). With nothing else to do, we spent the evening playing with computers and chatting to other developers (or rather, I did; Geoff and Rocco borrowed my umbrella and went out to see the sights of Buxton in the rain.)

Saturday Night's Alright

In the computer room, there were some interesting sights to see. Jolyon Ralph made us a little envious with a tiny 800 Mb portable SCSI drive he had brought with him containing his entire CDTV development system. The Amiga Centre Scotland had also brought along a Harlequin board and VideoBlender which were doing all kinds of neat video effects in one corner. There were also two prototype A1200's which were basically Amiga 4000's with a black front and an '020 card installed instead of an '040. Commercial developers like Psygnosis had had similar machines for the preceding months, to help ensure games compatibility. All in all, it was well after midnight when I finally made it back to the hotel.

On Sunday, the final day, we started off with a session on *AppShell*, a tool Commodore are developing to make it easier to write Amiga applications with a standard look and feel. Unlike *ToolMaker* which is currently available, *AppShell* is still some way off. However, it offers significant advantages, including font-independence, built-in ARexx support, standardised tool types and host of other goodies. It comes in the form of a runtime library so application code size is kept to a minimum, and it has a companion program *AppBuilder* which allows the donkey work of creating an interface to be done using the mouse.

After that, Rocco and Geoff decided to go and find out all about DTP & Fonts in Mike Todd's Workshop session, while I headed for Dave Parkinson's talk on high-speed CDTV animation and sound. As well as showing us his *spooly.device* which allows animation and sound to be spooled directly from a hard disk or CD, Dave spent a bit of time discussing the kind of setup he uses for CDTV development, and demoed a handy little utility he's written called *MouseTrap* which lets you use a single keyboard and mouse to control two computers at once.

After lunch (up to the usual standard), it was into the large hall for a session with Jim Mackonochie, one of the early UK CDTV developers and currently the head of CDTV marketing at Commodore. He gave a rousing talk about the future of CDTV and Commodore's plans for promotion, and generally suceeded in lifting people's spirits a bit. One of the things Commodore have setup is a UK hotline that people can call for information on CDTV suppliers and titles, and they have also just completed some important deals with major UK distributors for CDTV promotion, with shops committing to stocking at least 30 titles each. They also have a team of 36 girls doing the rounds of CDTV dealers and demoing the units to customers.

Write On Time

Finally, it was on to the most spectacular session of the weekend. Entitled "0 to CD in 60 minutes", we were almost ready to give it a miss—it sounded like a fairly boring talk about the hassles involved in dealing with CD manufacturers, and the other session dealing with Workbench 2.0 and beyond sounded much more interesting. However, since the previous session had overrun a bit, we found ourselves still in the main hall when it began, so we decided to stay.

What it actually turned out to be was a demonstration of one of the new writeable CD units. Jim Hawkins, the presenter (and author of the *Asterix* CDTV titles) sat down in front of an Amiga 3000, wrote a small program in Modula 2, converted it into C, compiled it, and ran it to check that it worked okay. He then booted up a special bit of software for mastering ISO 9660 CD's and used a DirMaster style interface to choose which directories were to be included on the CD. The software went off and worked for a few moments, and generated a single huge image file containing all the directories and files in a format suitable for output to CD.

The next step was to load the special CD writing software. Writeable CD, unlike a hard disk or WORM drive, is a one-shot affair: the disc is spun up to speed, the laser turns on, a constant stream of data is sent to the drive for a while, the laser turns off, and you're done. The data stream must be continuous with no interruptions or you'll end up with an expensive coffee mat. On the PC version of this system, a special dedicated SCSI card is needed to ensure the system can keep up with the writeable drive. On the Amiga 3000 however, the standard onboard SCSI is fast enough to allow writing directly from the internal 105 Mb drive with no interruptions (though in practice you'd have a much bigger drive if you were doing CD development).

Anyway, Jim set this software running, and very shortly afterwards, he had in his possession a gold CD containing his program (along with various boot files etc. he had copied over as well). He inserted it into a nearby CDTV, and… it worked first time! (He admitted that he had intended to have one he "made earlier" on standby just in case, but he ran out of time!)

Overall, the whole thing took about 45 minutes, interspersed with lots of chat from Jim. Cost per disc is about £22, and you can write to each disk several times (until it has been filled), though only the most recent write is visible to the CDTV. To put this into perspective, prior to this, making a test CD involved a trip down to your local CD presser with a hard drive or computer tape under your arm and £400, followed by a several day wait until you got back your test disc and could try it out. If you made any mistakes, you had to go through the whole process again, until you were happy with it. At this point, you then went back and had a master pressed (£1,000 or so) from which the production discs could be pressed.

While this new system still requires you to have a final master pressed, it makes it much easier and cheaper to get to that stage. At a cost of £4,750 for the unit and software, it would pay for itself after only a few discs.

In the other 15 minutes (which he rather optimistically took at the start rather than the end of the session!), Jim demonstrated the new Sunrize Industries 16 bit four channel sampler. This comes with some very nice software and allows direct recording to disk, along with several other nice features. In theory at least, it would be possible to use this to digitally record a record, edit it on the Amiga, and then create the CD master using the writeable CD system—I spotted an "audio" option on the mastering software.

Winding Down

By now, it was after 4 PM and it was time for the conference to finish. After a "thank-you for all coming, see you again next year" speech, we headed outside for coffee and biscuits. Since we had a few hours to kill before heading back to the ferry, we spent some time chatting with Commodore people and also one interesting guy from Micro Anvika in London who is currently designing a Zorro III transputer board for raytracing, which he reckons will offer up to 40 times the performance of a 68040 when fully loaded with transputers! His own personal A3000 system is loaded with 64 megs of RAM to allow him to play long VistaPro animations directly from memory. And we thought *we* were power users!

Eventually, we headed back to Holyhead and after a calm (if sleepless) night, we arrived back in Dublin at 7:30 AM.

So, looking back, what did we learn? The most obvious thing was that Commodore are very serious about CDTV and are piling a lot of resources into it. They have accepted that they need to sell it to existing Amiga owners and so are now actively promoting it as the 'Multimedia Computer'. Another interesting observation was that almost all the developers we saw there seemed to be from small companies—there was a distinct absence of big names, such as Electronic Arts, Ocean, Psygnosis, etc. This was disappointing.

For myself, it was a very enjoyable weekend. Overall, it was excellent value for money (total cost was around £110 each, including travel, hotel, and conference fees). I think Rocco and Geoff enjoyed themselves too. The next developers conference is in Orlando, Florida, next January and with any luck, I'll be able to get to that as well.

LISP – A language with a difference

by Colum Keane

The name LISP is an abbreviation from LISt Processing, and this is essentially what a LISP interpreter does. LISP was designed in the early 1960's by John McCarthy of the Massachusetts Institute of Technology. This makes it the second oldest computer language after Fortran. He wanted to develop a language that allowed programmers to design programs in the same way that mathematicians proved theorems.

LISP in computer jargon is known as a functional language, as opposed to languages such as C, Pascal and BASIC which are known as imperative languages. The difference between the two is that where a C program is a sequential list of instructions to be carried out one by one by the machine, a functional language is one where all computation is done by applying a function to a list of arguments, some of which may be calls to functions themselves.

Functional languages are usually pure; that is, you can know how any given procedure is likely to behave. This is unlike languages like C where you are not sure about the effects of global variables, reference parameters etc., without mentally going through the program step by step. The core of LISP is quite small, being made up of a few primitive forms which are combined to form the large set of functions which LISP has become. It is similar to the way in which theorems can be proved from first principles.

A Taste of LISP

As LISP functions are not executed sequentially, they can sometimes be difficult to understand. Consider this program in BASIC:

```
A = ((B * C) + D)
Print A
```

In LISP we would feed in the following list:

```
(Format 't (+ (* B C) D))
```

and get a similar result.

Those familiar with a Reverse Polish Notation will recognise the format, i.e. the operator will always come before its operands. In this case, the innermost brackets `(* B C)` will be evaluated first. So, this 'program' will be executed from the inside out.

The above program, you will find, will probably not work in a LISP environment, because of one major difference between LISP and other more traditional computer languages. LISP, because of its nested statements, doesn't actually need permanent variables as such. They are implemented in order to give LISP programs more flexibility. For example, there are constructs which allow temporary variables to be created, say for iteration.

LISP is a symbol manipulation language. Numerical calculations are not often encountered. Two such symbol manipulation functions are *First* and *Rest.* They return the first element and a list of all but the first element respectively when a list is passed as an argument. Thus, to find the second element of a List, we would use the following code:

```
(First (Rest '(a b c)))
```

The apostrophe tells LISP that *a* is not a function with two arguments, *b* and *c*, but instead is a list of symbols. Such functions, along with recursion, can be used to build very powerful string manipulation operations.

Although recursion is available in most high level languages, it comes as second nature to LISP. Recursion allows problems to be solved more intuitively than by iteration using counters and loops. This factorial function illustrates the use of recursion in LISP:

```
(defun factorial (n)
 (cond ((eq n '0) '1)
       (else (* (factorial (- (n '1)) n)))))
```

This function calls itself recursively, each time reducing the value passed until it equals 0. It then returns a value of 1. So in effect we get the same result had we entered many nested multiplication functions. For example:

```
(factorial '5) = (* (* (* (* (* 1 1) 2) 3) 4) 5)
```

But as a result of such nesting (and the matching up of brackets) and recursive calls, LISP programs can often appear cryptic. For example:

```
(defun test (parm1) (cond ((eq x y)(car p q))((equal q w)
 (cons (cadr (cdr x))(caddr (car p))))))
```

This is one of the main criticisms levelled against LISP. Of course, better variable names and indentation help but you get the idea.

Practical Applications

LISP's greatest importance is undoubtedly in the area of Artificial Intelligence. This is because of LISP's flexibility in symbol processing, which mimics more closely the behaviour of natural systems. It also provides a data structure, i.e. the list, that allows expert systems written in LISP to be primed with knowledge more conveniently.

LISP is to be found in many such systems, including natural language interfaces, speech and vision interpreting systems, and systems that involve common sense reasoning (not an easy feat for a computer). As LISP systems become more widely available on smaller computers, it will be no time surely before applications written in LISP will begin to appear.

Amiga LISP

Due to the nature of LISP, in that it makes heavy use of recursion, a LISP environment is memory hungry. Usually it is run on large computers because of this constraint. However, there are versions for most personal and home computers, and the Amiga is no exception. One of the most popular versions is *AMXLISP*, which is an Amiga version of *XLISP*, a LISP environment widely available on many computers. It is available on Fish disk 181. Also available is *OakLISP* on Fish disks 519 & 520. A dialect of LISP, SCHEME, can be found on Fish disk 150.

The Amiga Handyman

by Mike Kay

Whining A1500/2000

Have you ever compared the noise of your A1500/2000 with that of your friends'? I recently discovered with the benefit of having two identical machines in my posession that my brand new A1500 made a high pitch sound that reverberated continuously to the point that I decided that I had had enough. I decided that I would investigate this mechanical imbalance and proceeded to extract the fan unit, a job that did not require much expertise. I did discover that I would need the use of a good magnifying glass and also the smallest member of my precision screwdriver set.

Having disconnected the fan unit and noted the orientation of the plug, I removed the circular plastic label from the face of the fan. This revealed the drive shaft and the locking ring that held it all together. It was at this point that the use of both the magnifier and fine screwdriver came into play. I was able to insert the fine tip of the 'driver into the split in the ring and with a gentle twisting motion on the 'driver without actually turning the ring, widen the ring enough to draw it off the shaft. A steady hand aided by the magnifier did the job.

The next items along the shaft were repeated on the other side of the fan itself. They included a minute ball race and washer. I made a careful note of the exact placement of each item, also noting that the gel that surrounded them was of a transparent type and not obvious to the naked eye. I took extra precautions not to let any dirt get into the system, as this would in time bring the system to a grinding halt.

I inspected each piece of the system very carefully with the magnifier and soon discovered that one of the washer had gauges cut randomly into one of its faces. That face happened to be the face next to the ball race, which in time would have cut into it and caused a failure. I was able to reverse the washer and reassemble the fan unit without any trouble. My advice to anyone attempting this 'corrective measure' is:

1) Make sure you really do need to check out your fan (check first for loose fittings or bolts).
2) Make sure you have the necessary tools. And finally,
3) Make sure you record the order in which parts are removed.

My A1500 has been purring along quietly ever since.

Disk Label Removal

Few manufacturers of computer disks supply removable labels, so I resorted to an old photographer's trick which I inherited from my studio 'packshot' days. This involves the use of petrol in small quantities in the removal process. Although only small quantities of this volatile liquid are needed, the user should only use it out of doors; failing that, use it in a well ventilated area away from any source of ignition. (Young people take note!) Small lighter fuel quantities may be obtained from tobacconists.

Proceed by dabbing a piece of tissue or cotton cloth in the fuel and gently massaging this into the face of the label until the full surface has absorbed the liquid. This will vary, depending on the quality of the paper itself. Plastic coated labels will need their top surface removed or at least scored, to allow the fuel to reach the adhesive underneath.

Repeat this on about three of the disks, leaving each one face down in order to prevent the petrol from evaporating. By this time the first label will be ready to peel off. Should you have any difficulty at this stage then re-soak the label and wait a while longer. The disk should now be totally clear of all paper and adhesive.

WARNING: This process requires very small quantities of the fuel. Young persons attempting this should seek the assistance of an adult.

Having removed many labels this way over the years, I have yet to experience any failures in any of my disks that can be attributed to this process.

Screen Flicker

Another useful little ditty straight out of the photographer's toolbox is the flexible sheet of polarized acetate, known only to those in photo circles as the *Quarter Wave Retardation Plate.* Ahem!

This acts as a filter, only allowing light of a selective nature to pass through. You may ask what the `!&@*!!` this has got to do with how much I fork out to my optician each visit. Quite a bit, considering that this screen will cost you substantially less than the one you see advertised every so often in computer magazines. It is also shatterproof and lightweight.

It will reduce flicker considerably and can be mounted simply by the use of four pieces of blue tack. I have used one for quite some time now as a permanent fixture on my 1084 monitor and have found it extremely comfortable to work with.

The Power Mouse

by Kieran Tully

The Power Mouse from Power Computing is a replacement for the original Commodore rodent. It comes with a mouse house for your new pet to sleep in. It is interesting to note, however, that the mouse is not actually manufactured by Power Computing, but is a branded Contriver mouse in a different box.

It operates at a speedy 290 DPI, and once cleaned regularly, it glides smoothly across your desktop. The micro-switched mouse buttons are very sensitive and give a reassuring click when pressed. The mouse also has a switch for users of that powerful computer (well, maybe the term 'computer' is a bit strong!) the Atari ST. Inside, there is a heavy rubber ball which can easily be removed for cleaning purposes.

The design and build of the mouse, contrary to the opinion of certain magazines, is good. It looks like a quality product, feels natural in the hand, and is light and easy to move.

Problems

Despite this praise, there are some problems with this mouse. As noted above, the buttons are sensitive; in fact, too sensitive. It is quite possible to click accidently on the left mouse button with a stray hand while ejecting a disk from the internal disk drive or even when moving the mouse. In some software (e.g. some PD menu enhancers, *DPaint*, etc.) this can be quite annoying.

Another problem is the 'self-cleaning system' as stated on the box. This miraculous system manages to leave the mouse ball totally free of dust by transferring all the dust onto the rollers, clogging up the movement of the mouse and making cleaning a neccessary and regular occurrence.

Conclusion

Niggles apart, this is an excellent replacement for the original Commodore effort. I would whole-heartedly recommend it to anyone who is thinking of buying a new mouse, or is fed up with their old one. The official price is Stg£15, though I picked it up for £13 so it is worth shopping around. And just think of the benefits... two player *Lemmings* at last!

CUGI Crossword #6

by Aidan Hollinshead

1		2		3	■	4		5		6	■	7
	■		■	8	9		■		■	10		
11				■		■	■		■		■	
	■		■	■	12					■	■	
■	13			14		■	■		■	15	■	■
16	■		■		■	17						■
18					■		■	■	■		■	■
	■	■	■	19	20			21				22
23			24	■		■	■		■		■	
	■	■		■		■	25					
■	26							■	■		■	■
■		■		■		■	27					
28								■	■		■	■

Across

1. Number of fingers (5)
4. Noah's favourite fruit (5)
8. Could the six and thousand have strength? (3)
10. I'm soft says the pixie (3)
11. Against a female relative (4)
12. I allow a small island (5)
13. Are the southern pegs turning? (5)
17. Is 17 down repetitively saucy? (6)
18. Initiate about the tennis division (5)
19. Seriously using near style (9)
23. Donations in Palm Sunday (4)
25. Choice of the stirred potion (6)
26. Mocking the drink with a song (7)
27. Make noise from erring (6)
28. Does the plane do the opposite of flame swallowing? (8)

Down

1. Be afraid of the loud sensory organ (4)
2. Are eight cats a marine animal? (7)
3. A short tube (2)
4. Is the chief politican late in the day? (2)
5. A jetty to come into sight (6)
6. Half a dozen of the southern nine (3)
7. Jumble post for a blemish (4)
9. Is twice Egyptian (4)
14. A musical tone (4)
15. A bird in a Christmas Tree? (9)
16. Monastery chef? (5)
17. Could the rat get sticky back? (3)
20. As 9 down goes back to Italy (6)
21. Initially psychic power (3)
22. Desire for Japanese money (3)
24. Could a beginning be found in the last artist? (5)
25. Does gore make a monster? (4)
26. Hint about a rubbish dump (3)

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